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3.7 Water Use in the Landscape

Water is key to the survival and prospering of plants in the landscape. Plants use water to absorb and transport nutrients, to respire, to maintain temperature balances, and to remove wastes. Water should be delivered at a rate and on a cycle appropriate to the plant materials in question. The challenge with green facilities is to use water efficiently, to avoid its use when not required, and to maintain—or even improve—water quality.

Opportunities

Efficient water use in the landscape is best planned as part of the initial development and site planning of a facility. There are also many opportunities for improving water use at existing facilities. Irrigation infrastructure typically has to be substantially renewed every twenty to thirty years; this is a good time to thoroughly examine and improve water use and water efficiency. The availability of innovative new water sources for irrigation, such as graywater and reclaimed water, provides another opportunity for modifying a landscape irrigation system.

Technical Information

The lawn is almost solely an American horticultural obsession. It represents an attitude toward water use and plant selection that, in many geographic areas, is out of synch with the actual cultural requirements of the plants that we typically use and the microclimate in which we expect them to grow and perform. Water plays a very large part in the support of lawns. In fact, many other equally acceptable, and equally American, planting design approaches can be implemented to benefit local and regional water conservation and quality. Responsible water use in the landscape begins and ends with the plant materials selected and designed for the facility. The five components of a facility's water regime are supply, quality, delivery (irrigation), planting design, and public awareness programs.

WATER SUPPLY

Pursue the use of reclaimed water for irrigation, from local utilities and site facility utilities. This can include treated wastewater from sewage treatment plants, steam condensate, graywater, and filtered industrial-process water.

Pay particular attention to reducing dependence on limited aquifers, especially those in which the "fossil water" is nonrenewable or subject to very long (possibly geologically long) recharge cycles.

Reduce dependence on river and stream water when the downstream water supply is limited.

Reduce dependence on water that is energy intensive to use and procure—for instance, water that is transported long distances (whether by truck or canal). Water conservation programs in Southern California, for example, can often be justified for the energy savings alone, because huge energy expenditures are required to pump water over mountains.

Design landscapes that rely on irrigation only during the toughest drought conditions.

Collect water that falls on the site or buildings for irrigation use, either by storage and use or by site grading, which delivers site and roof waters to wider planting areas. In rainwater catchment areas for stormwater control, advantage can be taken of this *ephemeral* supply to promote water-loving and even riparian plant materials, including trees, shrubs, and groundcover.

Develop a drought plan with the design. To minimize drought impacts, integrate thinking about plant and soil selection, maintenance techniques, and drainage. Zoned irrigation allows irrigation of expensive-to-replace shrubs and trees, as well as cutbacks on turf that can be more easily replaced after severe droughts.

WATER QUALITY

Water for landscape irrigation can be much lower in quality than potable drinking water. Alternative water sources should be investigated, especially for larger projects.

Retain as much stormwater flow on site as possible to minimize downstream degradation, erosion, flooding, and the need for an expensive conveyance infrastructure.

Separate storm and sanitary sewer systems. Design stormwater systems to reflect, as much as possible, the natural-state watershed runoff characteristics. Use detention basins to contain the overflow.

Minimize surface and groundwater pollution by treating (or separating pollutants from) parking lot runoff; pretreat water flowing off-site. In general, biofiltration is the best treatment option; mechanical separation makes sense only where high levels of pollutants are generated (such as fuel storage and very large parking lots).

Organic landscaping techniques and integrated pest management (IPM) programs can lessen soil and groundwater pollution.

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Appropriate fertilization techniques will reduce nutrient loading in waterways, lakes, and rivers, and enhance local and regional water quality as a result.

WATER DELIVERY AND IRRIGATION

Reduce aerial sprinkling by providing for the use of drip and bubbler irrigation.

Properly zone the irrigation system to the specific needs of plant materials and site microclimate.

Irrigation scheduling: Adjust the time of operation to match the current supplemental needs of the plant material. Use controller timing, system zoning, irrigation durations optimized for drip systems, and adjustment for seasonal variation. Tensiometers, when properly placed, may be used to determine irrigation demand based on soil moisture content. Photovoltaic (PV)-powered irrigation controls can also be used where electric power is not available (such as on road medians).

Perform routine maintenance to ensure proper system functioning and reduce the risk of water loss due to leaks.

Maintenance: Check the backflow preventer device annually, winterize the irrigation system, check the height of sprinklers, perform spring start-up carefully.

Investigate the use of separate delivery systems for potable water, reclaimed water, and other sources of irrigation water. Look for opportunities to combine large irrigated areas (parks, golf courses, etc.) on separate delivery systems.

PLANTING DESIGN

Reduce areas of lawn, particularly in regions where lawn grasses are not native and where water usage is high.

Replace lawn with shrubs, groundcovers, and mulch.

Mulch what you water—water retention is much improved in mulched areas.

Use local and regional native and (non-invasive or infertile) naturalized plant materials appropriate to the microclimate regimes of the facility to reduce water take-up and to balance water use and soil development objectives.

Use associated plant palettes over broader areas to minimize the need for zoning and related controls.

In arid regions and areas prone to drought, install xeriscape (low-water-use) landscapes that are appropriate to the region. In the Southwest, these might be cactus gardens in sand; in the Midwest, these might include buffalo grass lawns and tall-grass prairie meadows.

PUBLIC AWARENESS

Proactive public relations can be an important part of communicating the benefits of certain actions or changes in water management that might otherwise raise questions in the community.

Develop demonstration areas and signage programs that make changes in landscape management visible and comprehensible to the public.

Watering of Federal facility grounds during drought periods, which often results in a public outcry but is important to plant viability (and generally less expensive than plant replacement), will generate less concern if there is signage indicating that watering is being done with “Recycled Water Only” (presuming that it is the case, of course!).

Landscaping with native or more naturalized plantings can garner public support for Federal landscaping expenditures. “Natural Revegetation Area” and similar signage will help to clarify the intent and the responsible motives at work with such landscaping practices.

Initiate public demonstration projects, such as xeriscape demonstration gardens, to help foster public understanding of appropriate plantings and water conservation techniques. Good demonstrations also help to show attractive landscapes and dispel “rock and cactus” stereotypes.

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